

MEDICAL MATTERS.

THE TREATMENT OF DIPHTHERIA INFECTION BY MEANS OF DIPHTHERIA ENDOTOXIN.

Dr. Tanner Hewlett, F.R.C.P., Professor of Bacteriology in the University of London, and Dr. A. T. Nankivell, D.P.H., contribute to the *Lancet* an interesting article on the above subject, in which they say in part:—

“Those occupied in the prevention and treatment of infective diseases know how frequent are diphtheria carriers and chronic cases of diphtheria. An attack of diphtheria after early treatment with antitoxin may pass rapidly to a complete convalescence. In a few weeks the patient may be well, ready and desirous for discharge from quarantine; unfortunately, however, the diphtheria bacilli may still be present in the throat or nose. Some of these chronic cases may remain infective for months, yielding pure cultures of virulent diphtheria bacilli; indeed, one such case, under the care of one of us (A. T. N.) persisted for so long as 15 months. Naturally such cases are a source of trouble to the authorities of isolation hospitals: the expense of their maintenance is great; and their anxious, and often importunate, relations may fail to recognise that continued isolation is essential in the interests of the public health.

“The cause of this chronicity and persistence of infection is not known. Certainly, it seems to bear no relation to the quantity of antitoxin given to the patient, nor is it associated especially with any one morphological variety of the bacillus diphtheriæ. Again, it is impossible to foretell in what patients the infection will become chronic, and hence difficult to answer the question of the parent who asks how long the child will remain infectious. Speaking generally, we should say that children, who physically are not robust, are more likely to become chronic carriers than other more healthy children. Patients suffering from scarlet fever, who at the same time harbour the B. diphtheriæ in nose or throat, more often become chronic carriers of the bacillus than do pure diphtheria cases. On the other hand, diphtheria patients who subsequently contract scarlet fever do not tend towards chronicity in their B. diphtheriæ infection.

“Ever since the practice of swabbing convalescent cases of diphtheria became general, the treatment of the chronic carrier has received more and more attention. On the whole, it may be said that the treatment of this condition is very unsatisfactory. Perhaps complete isolation (in order to prohibit the possibility of re-

infection) has, in hospitals, hitherto been the least unsuccessful. Local treatment, antiseptic gargles, syringing, lozenges, sprays, and inhalations have given no definite and immediate results; nor do we wonder at this failure. The crypts of the tonsils or the accessory air sinuses of the nose offer favourable and impregnable resting-places for the bacilli, where they are far removed from the influence of the antiseptic. Medicinal treatment likewise is unlikely to destroy the organisms.

“In selecting our cases for treatment with diphtheria endotoxin we have, so far as we were able, taken only those in whom chronicity of infection seemed to be well established; but here, as in other treatment, the *post hoc aut propter hoc* difficulty is present: Would the patients have become free of their infection without the use of the endotoxin?

“We tried to put this question to a practical test as follows. Ordinary cases of faucial diphtheria are not, as a rule, free from infection for a month or five weeks after the onset of the attack. We gave diphtheria endotoxin to five such cases while the membrane was still present on the tonsils; all these cases gave practically pure cultures of the B. diphtheriæ. Between ten days and a fortnight from the date of injection of the endotoxin four of these five cases were free from diphtheria bacilli, and the fifth was free a fortnight later. This rapidity of the disappearance of the micro-organisms may have been a coincidence, but we think it unlikely.

“Most of our patients had harboured the diphtheria bacilli for many weeks or months. After one or more injections of the endotoxin all the cases showed definite improvement. In many the diphtheria infection ceased entirely; in some it persisted, and the patient remained uncured; but even in these unsuccessful cases we noted invariably a diminution in the number of bacilli present microscopically; where previously the swab had given almost a pure culture of the diphtheria bacillus, a few isolated clumps only were found.

“With regard to dosage, we began with small quantities of the endotoxin—0.5 mgm. and 1.0 mgm.; but our cases treated with these doses did not do so well as subsequently, when we employed an initial dose of 2 mgm. At the end of a week or ten days, if the swab was still positive, a dose of 5 mgm. was given; and this, if necessary, was repeated later. The dose was the same for children and for adults. No ill effects, except some redness and tenderness around the site of injection, follow the administration of the endotoxin.

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